

## **REMARKS / DISCUSSION OF ISSUES**

Claims 1-24 are presented for examination. Claims 1, 15, 18, 22 and 24 are the independent claims and have been amended. No new matter is entered.

### **Appeal**

The present Request for Continued Examination serves to constructively withdraw the Appeal to the Board of Patent Appeals and Interferences.

### **Request for In-Person Interview with the Examiner**

Applicants respectfully request an in-person interview at a time of mutual convenience to the undersigned and the Examiner. The undersigned will contact the Examiner in the comparatively near future to arrange this interview. If however, the Examiner has not been contacted by the undersigned upon commencement of review of the present Response, Applicants request that the Examiner contact the undersigned to arrange the interview.

### **Rejections under 35 U.S.C. § 103**

Applicants have reviewed the rejections summarized in the Examiner's Answer. Applicants in no way concede the propriety of the rejections; but rather maintain certain previously stated positions set forth in their Appeal Brief. This notwithstanding, Applicants submit that amended claims 1, 15, 18, 22 and 24 are patentable over the applied art. Notably, claim 1 recites:

*A two dimensional photonic crystal sensor apparatus comprising:*

*a waveguide for inputting light; and*

*a photonic crystal slab comprising: a two dimensional periodic lattice of holes, said two dimensional periodic lattice of holes comprising: a first nearest neighbor direction and a second nearest neighbor direction; a lattice constant; and a defect hole, said photonic crystal slab configured to couple said light from said waveguide along*

*said second nearest neighbor direction and configured to confine said light in said defect hole at an operating wavelength, wherein a coupling efficiency of said light along said second nearest neighbor direction is greater than a coupling efficiency along said first nearest neighbor direction.*

Claims 15, 18, 22 and 24 each include features similar to those set forth in emphasis in claim 1.

As described in the filed application in accordance with a representative embodiment beginning at line 17 of page 6:

The two distinct directions on photonic crystal lattice structure 110 are the nearest neighbor direction ( $\Gamma K$ ) and the second nearest neighbor direction ( $\Gamma M$ ). Between conventional ridge waveguides 175, photonic crystal sensor 100 typically has six layers of photonic crystal along the  $\Gamma M$  direction and typically eleven to twelve layers along the perpendicular  $\Gamma M$  direction. In accordance with an embodiment of the invention, light is coupled into photonic crystal sensor 100 along the  $\Gamma M$  direction because the coupling efficiency along the  $\Gamma M$  direction is typically at least a factor four higher than the  $\Gamma K$  direction. The difference in coupling efficiency arises because the in-plane leakage from the finite size effect in these kinds of dipole modes lies mainly along the  $\Gamma M$  direction.

Applicants respectfully submit that the applied art fails to disclose at least the noted features of claims 1, 15, 18, 22 and 24; and therefore claims 1, 15, 18, 22 and 24 are patentable over the applied art. Furthermore, claims 2-14, 16-17, 19-21 and 23, which depend from claims 1, 15, 18 and 22, respectively, are patentable for at least the same reasons and in view of their additionally recited subject matter.

### **Double Patenting**

The provisional double-patenting rejection under the judicially created doctrine of obviousness-type double patenting has been considered. To the extent that this rejection is germane in view of the present amendments to claims 1, 15, 18, 22 and 24, Applicants submit that if necessary and proper, a terminal disclaimer will be filed to negate this rejection.

**Conclusion**

In view of the foregoing, applicant(s) respectfully request(s) that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance.

If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted on behalf of:  
Agilent Technologies, Inc.

**/s/William S. Francos/**

by: William S. Francos (Reg. No. 38,456)

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